

Noncommunicable Diseases and Disabilities

Lesson 1

Cardiovascular Diseases

Lesson 2

Cancer

Lesson 3

Allergies, Asthma, Diabetes, and Arthritis

Lesson 4

Physical and Mental Challenges

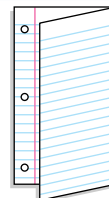


Before You Read

Make this Foldable to help you organize what you learn about cardiovascular disease. Begin with a sheet of notebook paper.

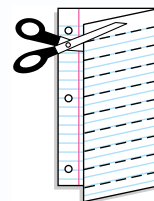
Step 1

Fold a sheet of notebook paper in half along the long axis.



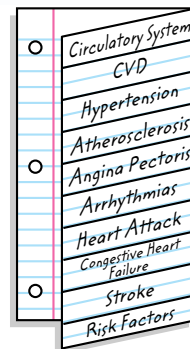
Step 2

On the top fold, cut along every third line from the outside edge to the centerfold to form ten tabs.



Step 3

Label the tabs as shown.



As You Read

As you read and discuss the material in the chapter, use your Foldable to define terms, take notes, list statistics, and write descriptions pertaining to the chapter vocabulary terms.

Quick Write

Using Visuals. Healthful lifestyle behaviors, including eating nutritious foods and getting regular physical activity, can reduce a person's risk of developing diseases such as heart disease and cancer. Describe one lifestyle behavior that can reduce the risk of skin cancer.

Lesson 1

Cardiovascular Diseases

VOCABULARY

noncommunicable disease
cardiovascular disease (CVD)
hypertension
atherosclerosis
angina pectoris
arrhythmias

YOU'LL LEARN TO

- Examine different types of cardiovascular diseases.
- Recognize the importance of early detection and warning signs that prompt individuals of all ages to seek health care.
- Identify risk behaviors and risk factors for cardiovascular diseases.
- Develop, analyze, and apply strategies related to the prevention of noncommunicable diseases such as cardiovascular disease.



Brainstorm a list of heart-healthy habits. Briefly explain how you think each one benefits your heart.

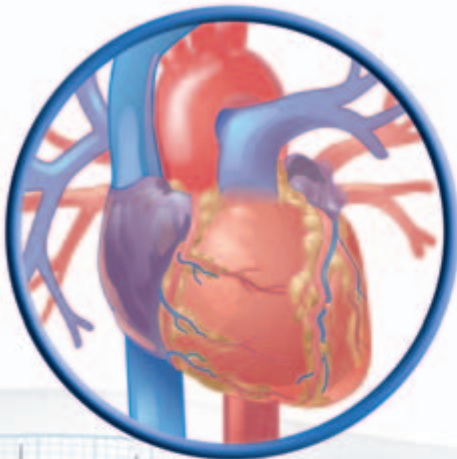


Every day your heart pumps blood through the arteries to all the cells of your body. *Why should you establish and maintain healthful habits to care for your heart?*

A century ago communicable diseases were a leading cause of death in the United States. Since then, the average life span of Americans has nearly doubled, primarily because of public health efforts and new technologies. Today, however, major causes of death, such as heart disease and cancer, come from a different kind of disease. A **noncommunicable disease** is a disease that is not transmitted by another person, a vector, or the environment. Medical science has identified certain habits and behaviors that either increase or decrease the risk of many of these diseases.

Cardiovascular Diseases

Your cardiovascular system transports blood to all parts of your body. Without oxygen and other materials that blood carries, your cells would die. Sometimes diseases interfere with the pumping action of the heart or the movement of blood through blood vessels. A **cardiovascular disease (CVD)** is a disease that



affects the heart or blood vessels. Approximately 61 million Americans have some form of the disease. CVDs are responsible for more than 40 percent of all deaths in the United States, killing almost a million Americans each year.

Types of Cardiovascular Disease

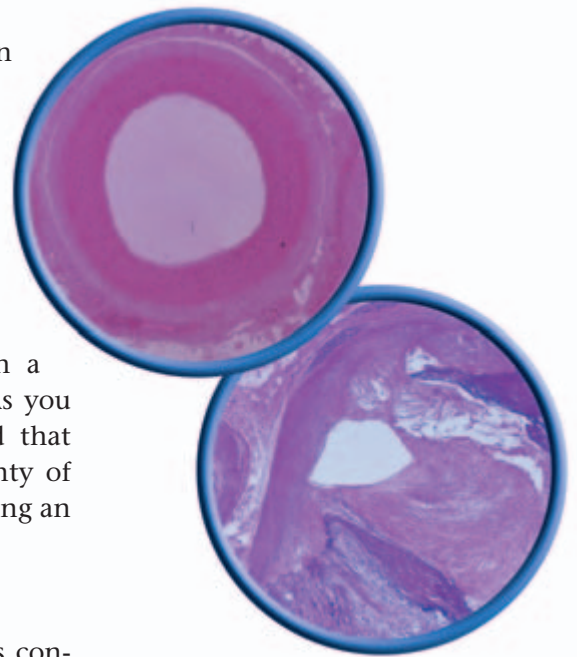
The heart, blood, and blood vessels are the main parts of the circulatory system. When the parts work together properly, the cardiovascular system runs efficiently. When a problem affects one part, the entire system is threatened. As you read the description of each type of CVD, keep in mind that you can reduce your risk by avoiding tobacco; getting plenty of physical activity; maintaining a healthful weight; and following an eating plan low in saturated fat, cholesterol, and sodium.


Hypertension

Blood pressure is the force of blood created by the heart's contractions and the resistance of the vessel walls. Normal blood pressure varies with age, height, weight, and other factors. **Hypertension** is high blood pressure—pressure that is continually above the normal range for a particular person. If high blood pressure continues over a long period, the heart, blood vessels, and other body organs will be damaged. Hypertension is a major risk factor for other types of CVDs. Hypertension can occur at any age, but it is more common among people over the age of 35. Of Americans ages 20 to 74, 23 percent have hypertension. CVD, considered a “silent killer,” often has no symptoms in its early stages, so it's important to get your blood pressure checked regularly. High blood pressure can be lowered with strategies such as medication, weight management, adequate physical activity, and proper nutrition.

Atherosclerosis

At birth, the lining of blood vessels is smooth and elastic. Over time, factors such as tobacco smoke, high blood pressure, and high cholesterol levels can damage the inner lining of the arteries. Fatty substances in the blood, called plaques, can build up on the artery walls, causing the arteries to thicken and lose their elasticity. *The process in which plaques accumulate on artery walls* is called **atherosclerosis** (a-thuh-roh-skluh-ROH-sis). This buildup is due mainly to food choices—specifically, a high intake of saturated fats and cholesterol. Sometimes, a blood clot forms in the area of plaque. The clot grows until it blocks the artery. If the affected artery feeds the heart or the brain, a heart attack or stroke may result.



 The artery on the left is healthy. The one on the right shows evidence of atherosclerosis. **What effects can health behaviors have on body systems?**

Did You Know?



Blood pressure is written as two numbers. The first number is the *systolic* number, which represents the pressure while the heart is beating. The second, or *diastolic*, number represents the pressure when the heart is resting between beats. For example, 122/76 represents a systolic pressure of 122 and a diastolic pressure of 76. High blood pressure in adults is defined as 140/90 or above.

heart For more information about the structure of the heart and the cardiovascular system, see Chapter 16, page 417.

Diseases of the Heart

Your **heart** pumps about 100,000 times a day *every* day to move blood to all parts of your body. Just like every other organ, your heart needs the oxygen from blood to function. When the blood supply to the heart is insufficient to provide enough oxygen, the result can be pain, damage to the heart muscle, or even sudden death. Methods for diagnosing and treating diseases of the heart and other CVDs are summarized in **Figure 26.1**.

FIGURE 26.1

DIAGNOSTIC TOOLS

EKG

An electrocardiogram (EKG) produces a graph of the electrical activity of the heart. It helps detect the nature of a heart attack and shows heart function.



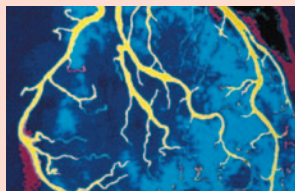
MRI

Magnetic resonance imaging (MRI) uses powerful magnets to produce images of internal body organs. The images are used to identify heart damage and heart defects.



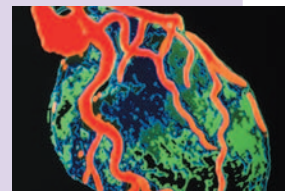
Radionuclide Imaging

Radionuclides injected into the blood can be observed on a computer screen as they pass through the heart. This procedure is used to assess the heart's blood supply and to show heart function.



Angiography

A thin, flexible tube is guided through blood vessels to the heart. Dye is injected, and motion X rays are taken to look for heart obstructions.



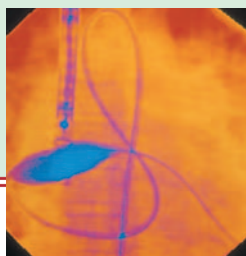
TREATMENT OPTIONS

Coronary Bypass

Often a healthy vein is removed from the leg or chest and placed elsewhere to create a detour around a blocked artery.

Angioplasty

A tube with a balloon is inserted into a blocked artery. The balloon is inflated against the artery walls. Then it is deflated and removed. A metal structure may remain to keep the artery open.

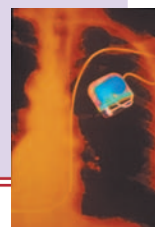


Medications

Various medications are used to treat CVDs. These include diuretics to aid with the body's fluid balance, cholesterol-lowering drugs, and drugs that slow the blood's clotting mechanisms in order to reduce risk of stroke.

Pacemaker

Pacemakers are used to treat an irregular heartbeat. The small device sends steady electrical impulses to the heart to make it beat regularly.



ANGINA PECTORIS

Angina pectoris (an-JY-nuh PEK-tuh-ruhs) is *chest pain that results when the heart does not get enough oxygen*. This pain, which usually lasts from a few seconds to minutes, is a warning sign that the heart is temporarily not getting enough blood. The most common cause of angina is atherosclerosis. Angina seldom causes permanent heart damage and sometimes can be treated with medication.

ARRHYTHMIAS

Arrhythmia is a change in the regular beat of the heart. The heart may seem to skip a beat or beat irregularly, very quickly, or very slowly. **Arrhythmias**, or *irregular heartbeats*, are common. They occur in millions of people who do not have underlying heart disease, and they usually don't cause problems. However, certain types of arrhythmias are serious. In one type of arrhythmia, called *ventricular fibrillation*, the electrical impulses regulating heart rhythm become rapid or irregular. This is the most common cause of sudden cardiac arrest, in which the heart stops beating without warning. Without immediate emergency help, death follows within minutes.

HEART ATTACK

Each year in the United States there are more than 1 million cases of heart attack, and more than 40 percent of those affected die. A heart attack is damage to the heart muscle caused by a reduced or blocked blood supply, usually because of atherosclerosis. Often ventricular fibrillation occurs seconds to hours or even days following a heart attack and can cause sudden death.

Many heart attacks are sudden and cause intense chest pain, but one in four produces no symptoms and is detected only when routine tests are done later. Most heart attacks start slowly with mild pain or discomfort, which is often mistaken for indigestion. Early detection of and immediate response to warning signs can often mean the difference between life and death.

CONGESTIVE HEART FAILURE

A heart attack is an immediate response to stress on the heart. Sometimes, however, the heart gradually weakens to the point that it cannot maintain its regular pumping rate and force. The result is a condition called congestive heart failure. This condition can be a result of high blood pressure, atherosclerosis, a heart valve defect, or other factors. Illegal drug use can also bring on this condition by increasing heart rate. Strategies for managing congestive heart failure include medication and the establishment of healthy lifestyle behaviors, such as a good nutrition and adequate physical activity.

Health Minute

Heart Attack Warnings

These warning signs indicate that a heart attack may be happening and immediate medical attention is needed.

The warning signs of heart attack:

- ▶ Pressure, fullness, squeezing, or aching in the chest area
- ▶ Discomfort spreading to the arms, neck, jaw, upper abdomen, and back
- ▶ Chest discomfort with shortness of breath, lightheadedness, sweating, nausea, and vomiting



In many cases sudden cardiac arrest can be reversed if CPR or electric shock using a defibrillator is applied. Why is it important to have defibrillators available in many different public places?



Hands-On Health

ACTIVITY

Start a Healthy Habit

Working prevention strategies into your everyday life is the best way to reduce your risk of cardiovascular diseases. Take the quiz, and then complete the activity.

What You'll Need

- pen or pencil
- paper

What You'll Do

Number a sheet of paper from 1 to 10. Read each statement and write “always,” “most of the time,” “once in a while,” or “never” for each item.

1. I avoid tobacco products and secondhand smoke.
2. I get 60 minutes of physical activity five or more days per week.
3. I get at least 30 minutes of moderate or 20 minutes of vigorous aerobic exercise at least three times a week.
4. I eat plenty of fruits, vegetables, and whole-grain foods.
5. I limit foods that are high in fat and cholesterol.
6. I limit my intake of salt and sodium.
7. I choose nutritious snacks.
8. I maintain a healthful weight.
9. I practice anger-management skills.
10. I practice stress-management skills.

Choose two habits you need to improve. In small groups, brainstorm a list of specific actions to help you practice these habits. Develop strategies to incorporate at least three healthy habits into your routine. Write a paragraph in which you describe your plan. After two weeks, evaluate what obstacles you faced, and identify what you are doing to improve.

Apply and Conclude

As a group, report on your successes in improving your lifestyle behaviors. Explain why the behaviors are healthful.

Stroke

When arterial blockage interrupts the flow of blood to the brain, a stroke may occur. Stroke can affect different parts of the body, depending on the part of the brain that is deprived of oxygen. Stroke also can occur as a result of a *cerebral hemorrhage*, a condition in which a blood vessel in the brain bursts, causing blood to spread into surrounding brain tissue.

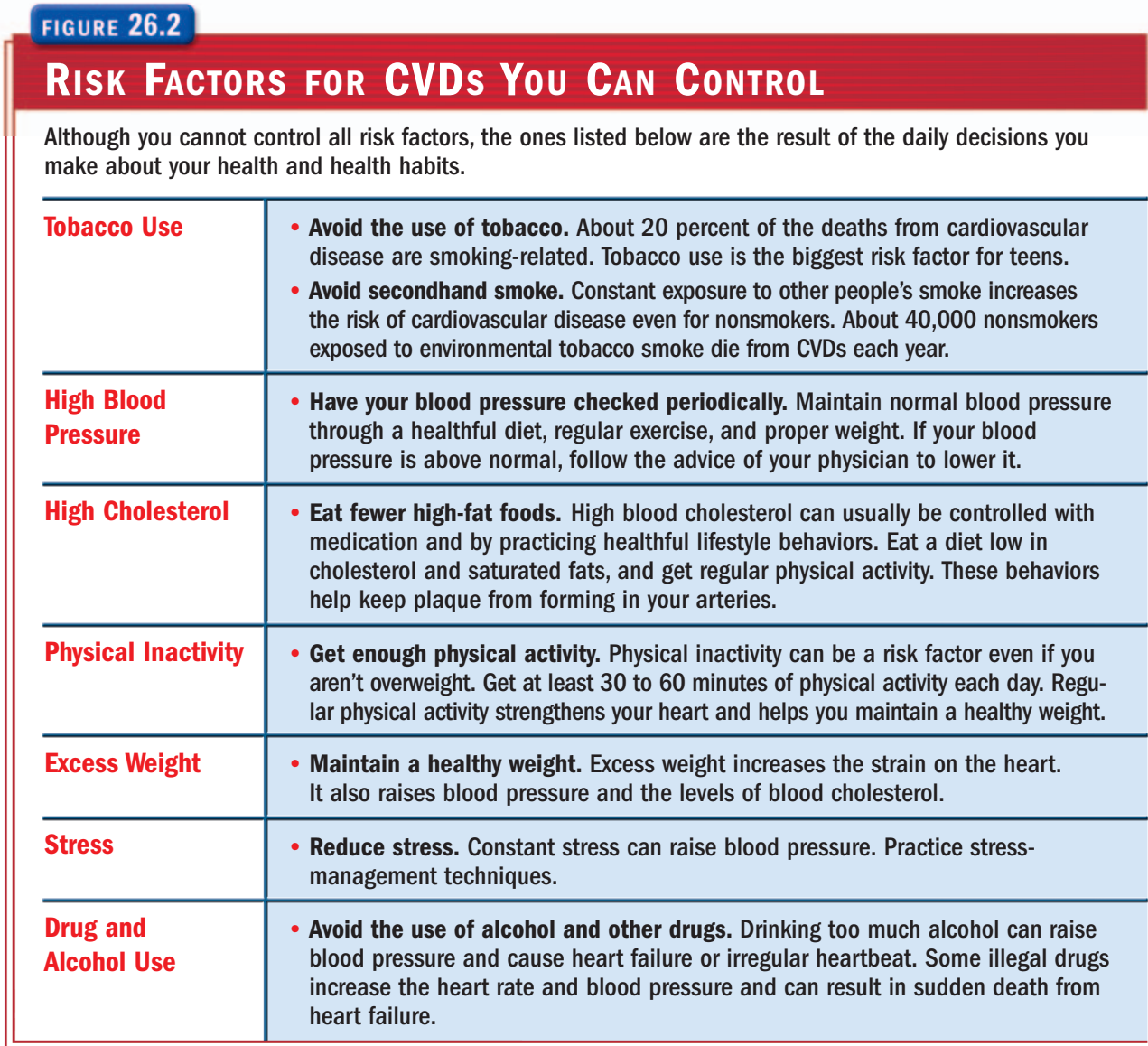
Why Teens Are at Risk

The behaviors established during your teen years and early adult life determine, in large part, your risk of developing CVD. Even though the symptoms of CVD often don't show up until

adulthood, the disease itself starts to develop in childhood, according to the American Heart Association. Autopsy results of adolescents who died from causes other than CVD have revealed that one in six already had evidence of CVD. Those who had a history of known risk factors, such as smoking or diabetes, were more likely to have blood-vessel damage. The health behaviors you practice *now* are affecting your cardiovascular system.

Risk Factors for Cardiovascular Disease

The American Heart Association has identified several factors, such as those in **Figure 26.2**, that increase the risk of cardiovascular disease. The more risk factors you have, the greater your chance of developing cardiovascular disease.





heredity To learn more about heredity and genetics, see Chapter 19, page 498.

RISK FACTORS THAT CANNOT BE CONTROLLED

Some risk factors for cardiovascular disease are out of your control, but you should be aware of them and know how they influence your health. These factors include:

- ▶ **Heredity.** Children whose parents have cardiovascular disease are more likely to develop CVD themselves.
- ▶ **Gender.** Men have a greater risk of developing cardiovascular disease earlier in life and a greater risk of having a heart attack than women do. However, research indicates that older women are less likely to survive a heart attack than men of the same age.
- ▶ **Age.** As people become older, they become more likely to develop CVD, as the risk increases with age. About 80 percent of people who die of cardiovascular disease are 65 or older.

Knowing the risk factors you can't control can help you make healthful decisions that protect your cardiovascular system. For example, if you have a family history of hypertension, you should be particularly careful to get the proper medical screenings and to practice preventive strategies, such as maintaining a healthful weight.



Lesson 1 Review

Reviewing Facts and Vocabulary

1. What is *atherosclerosis*? How does it contribute to heart attacks?
2. Define *cardiovascular disease*. How does regular physical activity help prevent CVD?
3. What are five risk factors for CVD that you can control?

Thinking Critically

4. **Evaluating.** Which of the treatments in Figure 26.1 would most likely be used to treat atherosclerosis?
5. **Synthesizing.** How can practicing healthy lifestyle behaviors now help you avoid cardiovascular disease in the future?

Applying Health Skills

Practicing Healthful Behaviors. On a sheet of paper, design a table that lists five of your favorite snacks, and find out which ones are “heart-healthy.” For each of the others, think of healthier alternatives that you would enjoy. Enter the alternatives in your table.



SPREADSHEETS Using spreadsheet software to create your table will help you organize and display your thoughts. See health.glencoe.com for tips on how to get the most out of your spreadsheet program.



Cancer

VOCABULARY

cancer
tumor
benign
malignant
metastasis
carcinogen
biopsy
remission

YOU'LL LEARN TO

- Examine the causes and types of cancer and the treatments for cancer.
- Relate the importance of early detection and warning signs of cancer that prompt individuals of all ages to seek health care.
- Examine the effects of health behaviors that put you at risk for developing cancer.
- Develop, analyze, and apply strategies related to the prevention of noncommunicable diseases such as cancer.



Make a list of any factors or behaviors you know of that can put a person at risk for developing cancer.

The body's cells are constantly growing and dividing. Most new cells are normal, but some are not. Sometimes these abnormal cells reproduce rapidly and uncontrollably, forming masses of abnormal cells inside otherwise normal tissue. This *uncontrollable growth of abnormal cells* is called **cancer**.



How Cancer Harms the Body

An *abnormal mass of tissue that has no natural role in the body* is called a **tumor**. Some tumors are **benign**, or *noncancerous*. Benign tumors grow slowly and are surrounded by membranes that prevent them from spreading from the original site. Although noncancerous tumors don't spread, they can be dangerous if they interfere with normal body functions. For example, a benign brain tumor may block the brain's blood supply.

Tumors that are **malignant**, or *cancerous*, spread to neighboring tissues and through the blood or lymph to other parts of the body. *The spread of cancer from the point where it originated to other parts of the body* is called **metastasis**. As cancer cells spread throughout the body, they divide and form new tumors.

Reduce your risk of skin cancer by protecting yourself from the sun's ultraviolet (UV) rays and reducing the amount of time you spend in the sun. *How does each item in the picture help protect you from UV rays?*

Many cancers harm the body because they kill normal cells when they compete with them for nutrients. Tumors put pressure on surrounding tissues and organs, interfering with body function. They can also block arteries, veins, and other passages in the body.

Types of Cancer

Cancer can develop in almost any part of the body and in different tissues of each part. **Figure 26.3** shows some types of cancers, grouped according to the body organs where they first develop. Cancers also can be classified according to the tissues they affect.

- ▶ *Lymphomas* are cancers of the **immune system**.
- ▶ *Leukemias* are cancers of the blood-forming organs.
- ▶ *Carcinomas* are cancers of the glands and body linings, including the skin and the linings of the digestive tract and lungs.
- ▶ *Sarcomas* are cancers of connective tissue, including bones, ligaments, and muscle.

Risk Factors for Cancer

Abnormal cells that have the potential to become cancer cells are produced every day and the immune system destroys most of them. If the immune system becomes weakened or the number of cancer cells becomes overwhelming, cancer may develop. In some cases normal cells change by themselves. In others a faulty gene may have been inherited; between 5 to 10 percent of cancers are hereditary.

The majority of cancers are caused by exposure to certain factors that increase the risk of cell damage. One factor is a **carcinogen** (car-SIN-uh-juhn), a *cancer-causing substance*. Examples of carcinogens are cigarette smoke and ultraviolet light. Several major risk factors for cancer are associated with lifestyle behaviors. It is estimated that about 60 percent of all cancers can be prevented through healthy lifestyle choices.

Tobacco Use

Tobacco use is the major cause of cancer deaths in the United States and the most preventable. Recent studies attribute nearly one in five deaths to smoking or exposure to **secondhand smoke**. About 87 percent of lung cancer deaths are caused by smoking. An additional 25 percent of females who smoke will die of other smoking-related diseases. Tobacco use also increases the risk of bladder, pancreas, and kidney cancers. At least 43 different carcinogens have been identified in tobacco and tobacco smoke.

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immune system For more information about the immune system, see Chapter 24, page 628.

hotlink

tobacco use For more information on the harmful effects of tobacco and **secondhand smoke**, see Chapter 21, page 538.

FIGURE 26.3

TYPES OF CANCER

Organ Affected (new cases/year)	Some Risk Factors	Symptoms	Screening and Early Detection Methods
Skin (1 million) Most common type of cancer in the United States	Exposure to ultraviolet radiation from the sun, tanning beds, sun lamps, and other sources	Change on the skin, especially a new growth, a mole or freckle that changes, or a sore that won't heal	physical exam, biopsies
Breast (205,000) Second leading cause of cancer death for women	Genetic factors, obesity, alcohol use, physical inactivity	Unusual lump; nipple that thickens, changes shape, dimples, or has discharge	self-exam, mammogram
Prostate (189,000) Found mostly in men over age 55	Possible hereditary link, possible link to high-fat diet	Frequent or painful urination; inability to urinate; weak or interrupted flow of urine; blood in urine or semen; pain in lower back, hips, or upper thighs	blood test
Lung (169,400) Leading cause of cancer deaths in the United States	Exposure to cigarette smoke, radon, or asbestos	No initial symptoms; later symptoms include cough, shortness of breath, wheezing, coughing up blood, hoarseness	chest X ray
Colon/Rectum (148,000) Second leading cause of cancer deaths in the United States	Risk increases with age; closely related to colorectal cancer	Often no initial symptoms; later, blood in feces; frequent pain, aches, or cramps in stomach; change in bowel habits; weight loss	test for blood in the stool, sigmoidoscopy, colonoscopy
Mouth (30,000) Occurs mostly in people over 40	Use of tobacco, chewing tobacco, or alcohol	Sore or lump on mouth that doesn't heal; unusual bleeding; pain or numbness on lip, mouth, tongue, or throat; feeling that something is caught in the throat; pain with chewing or swallowing; change in voice	dental/oral exam
Cervix (15,000)	History of infection with HPV (human papillomavirus)	Usually no symptoms in early stages; later, abnormal vaginal bleeding, increased vaginal discharge	Pap test
Testicle (7,000) Most common cancer in men ages 15 to 34	Undescended testicle; family history of testicular cancer	Small, hard, painless lump on testicle; sudden accumulation of fluid in scrotum; pain in region between scrotum and anus	self-exam

Smokeless tobacco use is a major risk factor in the development of oral cancer, which affects the lips, mouth, and throat. Oral cancer kills roughly one person every hour. You can greatly reduce your risk of cancer by avoiding all forms of tobacco as well as secondhand smoke.

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HPV and hepatitis B For more information on STDs that can cause cancer, see Chapter 25, page 648.

Skin cancer For more information on skin cancer warning signs, see Chapter 14, page 358.

Sexually Transmitted Diseases

Some viruses, such as the human papillomavirus (**HPV**) and the **hepatitis B** virus, cause cervical and liver cancers, respectively. The risk of acquiring these pathogens can be reduced by abstinence from sexual activity and from injecting drugs through infected needles.

Dietary Factors

Approximately 30 percent of all cancer deaths are caused by dietary risk factors. A diet that is high in fat and low in fiber is often linked with cancer. Fats make colon cells more susceptible to carcinogens. Colon cells divide more rapidly if the diet is high in fat, increasing the chance that abnormal cells will form. Choosing foods low in fat and high in fiber reduces the risk of colon, breast, and prostate cancers. Dietary fiber speeds the movement of waste through the intestines, so carcinogens have less time to act on cells.

FIGURE 26.4

A WORD OF CAUTION ABOUT CANCER

The American Cancer Society recommends that every individual should be alert to the seven warning signs of cancer. Note that their first letters, when combined, spell the word *caution*.

Change in bowel habits (either loose stools or constipation)

Asore that does not heal

Unusual bleeding or discharge (as from the uterus, bladder, bowels, nipple, or with coughing)

Thickening or a lump in the breast or elsewhere (Let your health care provider decide what the lump means.)

Indigestion or difficulty swallowing

Obvious change in a wart or mole

Nagging cough or hoarseness

Other symptoms include fatigue and unexplained weight loss. The presence of these signs does not necessarily mean a person has cancer. If you experience any of these symptoms, contact a health care professional.

Radiation

Ultraviolet (UV) radiation from the sun is the main cause of **skin cancer**. Tanning beds and sunlamps also emit UV radiation, which is just as damaging as the sun's rays. A "tan" is the body's response to being injured by UV rays.

About 80 percent of skin cancers can be prevented. Reduce your exposure to UV light by avoiding tanning beds and sunlamps. Limit your time in the sun, especially between 10:00 A.M. and 4:00 P.M. When you must be in the sun, wear protective clothing and use a sunscreen that has an SPF (Sun Protection Factor) of at least 15 and that blocks all types of UV radiation. Pay attention to changes in moles on your skin, one of the seven warning signs of cancer listed in **Figure 26.4**.

Reducing Your Risk

You can't control some risk factors for cancer, such as heredity, but you can reduce your risk by practicing the healthful behaviors listed in **Figure 26.5**.

FIGURE 26.5

How You Can Reduce Your Risk of Cancer



Practice abstinence from sexual activity to reduce the risk of sexually transmitted diseases. Hepatitis B can cause liver cancer, and HPV can cause cancers of the reproductive organs.



Be physically active.

Maintain a healthy weight.

Eat nutritious foods. Include 2–4 servings of fruits and 3–5 servings of vegetables every day. These foods are good sources of fiber, and some contain compounds that act against carcinogens.

Follow an eating plan that is low in saturated fat and high in fiber.



Protect your skin from ultraviolet radiation.



Avoid tobacco and alcohol. Tobacco is the single major cause of cancer death in the United States. Excess alcohol increases the risk of several types of cancer, including mouth and throat cancer.

Recognize the warning signs of cancer. Do regular self-exams to detect cancer early.

Detecting and Treating Cancer

Many advances have been made in the early detection and treatment of cancer, and many more people are successfully living with the disease than ever before. The survival rate for those with cancer depends on the type of cancer and how early it is detected.

Early detection is the most critical factor in successful cancer treatment. Many types of cancer can be detected through self-examination of the **breasts, testes, and skin**.

Screening for cancer is examination or testing for early signs of cancer even though a person has no symptoms. Medical screenings can result in early detection of about half of all new cancer cases each year. The current five-year survival rate with early detection is about 80 percent. With regular screenings, the rate could increase to 95 percent.

If cancer is a possibility, a **biopsy**, the removal of a small piece of tissue for examination, may be performed. A biopsy is usually

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testes and breast For information on testicular and breast self-exams, see Chapter 18, pages 472 and 477.

Health Skills Activity

Decision Making: Being Sun Smart

Amber rushes to meet her friends at the boat dock. "Sorry I'm late," she says breathlessly. "This is going to be great. I love to water-ski. Hey, does anyone have any sunscreen? I was in such a hurry that I forgot mine."

"I never use it. I don't burn," Taylor replies.

"I don't use it either. I like looking tan and healthy," Denise chimes in.

Amber knows that tan skin isn't healthy—it's damaged. "I always wear sunscreen," she says firmly. "I'll just run up the hill to that little corner store and buy some."

"Amber, the boat's in the water. We're ready to go," Denise protests.

What should Amber do?



What Would You Do?

Apply the six steps of the decision-making process to help Amber make a health-enhancing decision.

1. State the situation.
2. List the options.
3. Weigh the possible outcomes.
4. Consider values.
5. Make a decision and act.
6. Evaluate the decision.

necessary to determine whether cancer is present. X rays and other imaging techniques help determine a tumor's location and size.

Treating Cancer

The methods used to treat cancer depend on several factors, such as the type of cancer, whether the tumor has spread, and the patient's age and health. Treatment might include one or more of the following:

- ▶ **Surgery** removes some or all of the cancerous masses from the body.
- ▶ **Radiation therapy** aims rays from radioactive substances at cancerous cells. The radiation kills the cells and shrinks the cancerous mass.
- ▶ **Chemotherapy** uses chemicals to destroy cancer cells.
- ▶ **Immunotherapy** activates a person's immune system to recognize specific cancers and destroy them.
- ▶ **Hormone therapy** involves using medicines that interfere with the production of hormones. These treatments kill cancer cells or slow their growth.

Cancer that responds to treatment or is under control is said to be in **remission**, *a period of time when symptoms disappear*. Cancer in remission is not always cured; it can recur, sometimes years later.

HEALTH

Online



TOPIC Cancer Research

Go to health.glencoe.com to link to the American Cancer Society.

ACTIVITY Using the link, list five recent developments in cancer research.



Lesson 2 Review

Reviewing Facts and Vocabulary

1. Define *cancer*. Name four risk factors for cancer.
2. What is the difference between a benign tumor and one that is malignant?
3. What are two important means of early cancer detection?

Thinking Critically

4. **Analyzing.** The physician of an adult family member has suggested that the person undergo a certain cancer screening procedure as part of a routine exam. The family member is afraid to have this procedure done. What would you tell this person?
5. **Evaluating.** Why do you think skin cancer is the most common cancer in the United States?

Applying Health Skills

Advocacy. Develop a cancer-awareness booklet that analyzes healthful strategies to reduce cancer risk and encourages people to develop these habits. Include information on technology and new treatments that impact the health status of people with cancer.



WORD PROCESSING Use word-processing software to create your booklet. Use special formats, borders, and art. Click on health.glencoe.com for help using word-processing software.



health.glencoe.com

CONTENTS

Lesson 3

Allergies, Asthma, Diabetes, and Arthritis

VOCABULARY

allergy
histamines
asthma
diabetes
autoimmune disease
arthritis
osteoarthritis
rheumatoid arthritis

YOU'LL LEARN TO

- Explain the characteristics, symptoms, causes, and treatments of noncommunicable diseases.
- Describe the importance of taking responsibility for establishing and implementing health maintenance to prevent or manage noncommunicable diseases for individuals and family members of all ages.
- Develop and analyze strategies related to the prevention and management of noncommunicable diseases.



Think of a family member or someone you know who has one of the diseases discussed in this lesson. What does this person do to manage the disease or its symptoms?



An allergy to pollen, called hay fever, is one of the most common chronic diseases in the United States. Experts estimate that 35 million people suffer from hay fever.

Cardiovascular diseases and cancer are two of the most deadly noncommunicable diseases. Other noncommunicable diseases are chronic, meaning that they are present continuously or recur frequently over a long period time. Allergies, asthma, diabetes, and arthritis are chronic diseases that affect millions of people. Some, such as allergies, asthma, and certain types of diabetes, are caused by a response of the immune system. Others, such as osteoarthritis (ahs-tee-oh-ahr-THRY-tus), cause the breakdown of body cells and tissues.

Allergies

The sneezing and runny nose often associated with a cold are sometimes a response to substances in the air. An **allergy** is a *specific reaction of the immune system to a foreign and frequently harmless substance*. Allergies are among the common causes of illness and disability in the United States, affecting 40 to 50 million people.



Pollen, foods, dust, mold spores, chemicals, insect venom, and medicines are some of the more common *allergens*, substances that cause allergies. The body treats these allergens as foreign invaders. Antigens on the surface of allergens bind to special immune cells in the linings of the nasal passages. These cells release **histamines**, *chemicals that can stimulate mucus and fluid production in an area*.

Histamines produce the sneezing, itchy eyes, runny nose, and other symptoms that make a person with allergies uncomfortable. Some people have an allergic reaction that produces hives—itchy raised bumps on the skin. Others have serious reactions to allergens that can sometimes be life threatening. Severe symptoms include hives, itching or swelling of a stung area or the mouth, and difficulty breathing or swallowing. Other severe symptoms might be a raspy voice, swelling of the tongue, and a sharp drop in blood pressure, which can cause dizziness.

If someone you know experiences any of these symptoms after eating foods such as peanuts or shellfish or after being stung by a bee or wasp, seek medical attention immediately.

Diagnosing Allergies

Sometimes you can diagnose an allergy yourself. You may notice that when you are near certain kinds of plants you sneeze or that eating particular foods makes you break out in a rash. In some cases tests are required to determine the cause. Three common methods are used to identify the source of an allergic reaction—a blood test, a food elimination diet, and a skin test. During a skin test, the skin is scratched and small amounts of possible allergens are applied. If a person is allergic to any of the allergens, the skin in the area of the scratch swells and turns red because of the **inflammatory response**.

Treating Allergies

Sometimes allergy treatment can be as simple as avoiding the allergen. This is the best treatment for severe food and insect sting allergies. When avoidance is not possible, medicines, including *antihistamines* that help control the symptoms triggered by histamines, may be suggested. People with long-lasting or severe allergies should seek medical attention. Allergies can irritate the respiratory tract and lead to other health problems, such as asthma. People with severe allergies may receive *immunotherapy*, a series of shots that contain small amounts of the allergen to which the person is sensitive. The injections cause the immune system to become less sensitive to the allergens.



The body's response to allergens can cause a variety of symptoms.


What should you do if you or a family member experience more serious allergic reactions?

hotlink

inflammatory response

For more information about the inflammatory response, see Chapter 24, page 628.



 People with asthma can be active at any age if they manage the disease and use proper precautions.

Why is it important for people of all ages with asthma to take responsibility for establishing and implementing health maintenance?

Experiencing an unpleasant reaction to something you eat does not necessarily mean that you have a food allergy. For instance, lactose intolerance is not an allergy. Because symptoms are similar, this is a common misconception. In reality, only a very small percentage of people actually have proven food allergies. For those who do, the main method of treatment is avoiding the food that causes the allergic reaction. This usually requires diligently reading ingredient lists.

Asthma

Some allergic reactions can lead to **asthma**, an inflammatory condition in which the small airways in the lungs become narrowed, causing difficulty in breathing. More than 17 million people in the United States have asthma, and each year more than 5,000 Americans die of this disease. Asthma can develop at any age; however, about one-third of those with asthma are under the age of 18.

The bronchial tubes of people with asthma are sensitive to certain substances called *triggers*. Common asthma triggers include air pollution, pet dander, and tobacco smoke, as well as microscopic mold, pollen, and dust mites, shown on this page. In an asthma attack, the asthma triggers cause the muscles of the bronchial walls to tighten and produce extra mucus. The respiratory passages narrow. The result can range from minor wheezing—breathing with a whistling sound—to severe difficulty breathing. In some cases the condition becomes life threatening.

Managing Asthma

Although asthma has no cure, most people with the condition can lead normal lives by behavior changes and the proper use of medication. People with asthma can lead normal, active lives with proper management that includes the following strategies:

- ▶ **Monitor the condition.** Recognize the warning signs of an attack: shortness of breath, chest tightness or pain, coughing or sneezing. Treating these symptoms quickly can help prevent attacks or keep an attack from worsening.
- ▶ **Manage the environment.** Reduce asthma triggers in the environment. Avoid exposure to tobacco smoke, eliminate carpets and rugs when possible, and wash bedding frequently.
- ▶ **Manage stress.** Stress can trigger an asthma attack. Relaxation and stress-management techniques can be helpful.
- ▶ **Take medication.** Medications can be used to relieve symptoms, prevent flare-ups, and make air passages less sensitive to asthma triggers. A *bronchodilator*, a type of medication taken with an inhaler, relaxes and widens respiratory passages.

Diabetes

Diabetes is a chronic disease that affects the way body cells convert food into energy. Each year approximately 1 million new cases are diagnosed. There is no cure for diabetes.

In a person with diabetes, the pancreas produces too little or no insulin, a hormone that helps glucose enter the body's cells. In some diabetics adequate insulin is produced, but cells don't respond normally to it. For the cells in the body to function, they need a constant source of energy—glucose—from foods. If glucose is not converted to energy, it builds up in the blood, and cells do not get the glucose they need to function. The only way to diagnose diabetes is through a blood test. Early detection of diabetes can prevent serious side effects, such as blindness. Diabetes is the main cause of kidney failure, limb amputations, and blindness in adults, as well as a major cause of heart disease and stroke. These effects, however, are not inevitable. If diagnosed, the disease can be successfully managed with medication, a healthful diet, and regular moderate exercise. In many cases, diabetes is preventable.

Type 1 Diabetes

Type 1 diabetes, which accounts for 5 to 10 percent of all diabetes cases, appears suddenly and progresses quickly. The body does not produce insulin, and glucose builds up in the blood, starving cells of the energy they need. Over time, the high blood-sugar level can cause damage to the eyes, kidneys, nerves, and heart.

The cause of type 1 diabetes is not clear. Some scientists suspect an environmental trigger—perhaps an as yet unidentified virus—that stimulates an immune response, destroying the insulin-producing cells of the pancreas in some individuals. For this reason, type 1 diabetes is known as an **autoimmune disease**, a condition in which the immune system mistakenly attacks itself, targeting the cells, tissues, and organs of a person's own body. People with type 1 diabetes must take daily doses of insulin, either through injections or through a special pump that is attached to the body by tubing or that is surgically implanted. Today, because of advanced treatment methods, many people with diabetes are able to live near-normal lives.

Type 2 Diabetes

Type 2 diabetes accounts for 90 to 95 percent of all cases of this disease. It most often appears after age 40. However, type 2 diabetes is now being found at younger ages and is even being diagnosed among children and teens. In this form of diabetes, the body is unable to make enough insulin or to use insulin properly. Buildup of glucose in the blood causes many of the same symptoms as type 1 diabetes.



Symptoms of Diabetes

According to the American Diabetes Association, of the estimated 17 million people in the United States who have diabetes, almost 6 million of them don't know it.

Symptoms of diabetes include:

- ▶ Frequent urination
- ▶ Excessive thirst
- ▶ Unexplained weight loss
- ▶ Extreme hunger
- ▶ Sudden vision changes
- ▶ Tingling in hands or feet
- ▶ Frequent fatigue
- ▶ Very dry skin
- ▶ Sores that are slow to heal
- ▶ More infections than usual



People with diabetes need to work closely with health care professionals to manage their condition.
Why is early detection of diabetes important?



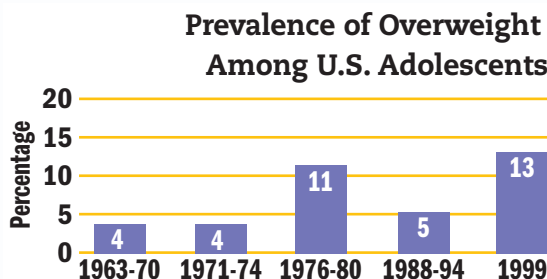
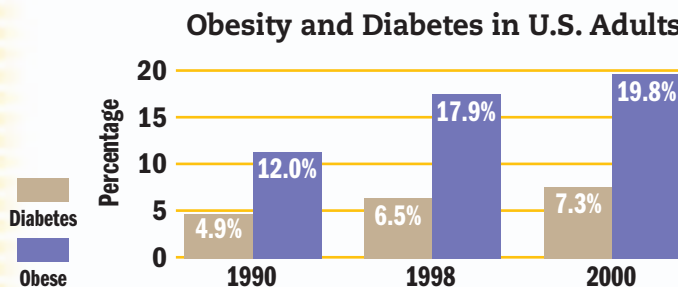
Type 2 diabetes is nearing epidemic proportions in the United States because of an increased number of older individuals in the population and a greater prevalence of obesity and inactive lifestyles. A diet high in fat, calories, and cholesterol increases the risk of diabetes. Thus, choosing lower-fat, lower-calorie alternatives can help reduce the risk of this disease. Increased physical activity also reduces risk because it helps control weight and lower blood cholesterol levels.

Treatment of type 2 diabetes includes weight management and regular physical activity. Individuals with this disease must

Real-Life Application

Raising Teen Awareness of Diabetes

Over the last decade diabetes and obesity have increased dramatically in both adults and teens. Examine the graph and answer the questions. Then use this information to create an advocacy message to encourage others to practice healthful behaviors to control their weight and reduce their risk of diabetes.



Source: CDC, Behavioral Risk Factor Surveillance System (1991–2000)

1. What do you observe about the relationship between the rates of diabetes and obesity in Graph 1?

2. What do you think would happen to the rate of diabetes if the rate of obesity began to decrease?

3. Look at Graph 2. What can you infer about the rate of diabetes in teens?

4. What are healthful eating habits and physical activity lifestyle behaviors that reduce the risk of diabetes?

ACTIVITY

In small groups, generate a list of lifestyle behaviors that people can practice to maintain a healthful weight and reduce their risk of diabetes. Create a 60-second public service announcement (PSA) to persuade teens to start good health habits early in life. Include at least one fact about diabetes and one lifestyle behavior that can reduce the risk of diabetes.

carefully monitor their diet in order to control their blood-sugar levels. In some cases oral medications or injections of insulin are required to manage the disease.

Arthritis

Arthritis is a group of more than 100 different diseases that cause pain and loss of movement in the joints. It is one of the most common medical problems in the world and the number one cause of disability in the United States—more than one in six people suffer from the disease. Arthritis is more common in older people, but it can affect anyone, including children and teens. In fact, 8.4 million people between the ages of 18 and 44 have arthritis, and millions of others are at risk for it.

Osteoarthritis

Osteoarthritis is a disease of the joints in which cartilage breaks down. Cartilage is the strong, flexible tissue that provides cushioning at the joints. In this disease the cartilage becomes pitted and frayed. In time it may wear away completely, and bones may rub against each other. Although osteoarthritis affects primarily the weight-bearing joints of the knees and hips, it can affect any joint—including those in the fingers, lower back, and feet—causing aches and soreness, especially when moving.

Osteoarthritis is one of the most common types of arthritis; in fact, it accounts for half of all arthritis cases. It affects about 20 million people in the United States and is most common in women and in people over the age of 45. Many people think that arthritis is an inevitable part of aging. However, several strategies reduce the risk of osteoarthritis:

- ▶ **Controlling weight.** Maintaining an appropriate weight reduces stress on joints by lessening wear and tear on cartilage.
- ▶ **Preventing sports injuries.** Warming up before exercising, adding strength training to your physical activities, and using appropriate equipment (including wrist guards and knee pads when necessary) help avoid joint injuries and damage to ligaments and cartilage, thus decreasing the risk of osteoarthritis. Let injuries heal completely before playing again.
- ▶ **Protecting against Lyme disease.** Lyme disease (which is spread by the bite of infected deer ticks), if left untreated, can result in a rare form of osteoarthritis. Using insect repellents, wearing long-sleeved shirts and pants when walking outdoors or in wooded areas, and being educated on tick recognition and removal can help reduce this risk factor.



▲ According to the Arthritis Foundation, an arthritis epidemic may result from the number of people who participate in adventure sports. *What can you do to reduce your risk of developing osteoarthritis?*

Did You Know?



Arthritis is the leading cause of disability among people age 15 and older. Arthritis and rheumatoid arthritis account for more than 15 percent of all disabilities in the United States.

Rheumatoid Arthritis

Rheumatoid arthritis affects about 2.5 million people in the United States. It is three times more common in women than in men. Symptoms usually first appear between the ages of 20 and 50, but the disease also can affect young children. Juvenile rheumatoid arthritis is the most common form of arthritis in children.

Rheumatoid arthritis is a disease characterized by the debilitating destruction of the joints due to inflammation. Like type 1 diabetes, this type of arthritis is caused by an autoimmune disease for which there is no cure. Sufferers are likely to experience joint pain, inflammation, swelling, and stiffness. Eventually the joints may become deformed and cease to function normally. Rheumatoid arthritis affects mainly the joints in the hand, foot, elbow, shoulder, neck, knee, hip, and ankle. Other effects include fever, fatigue, and swollen lymph glands. The effects of this disease are usually symmetrical—both sides of the body develop the same symptoms at the same time and in the same pattern.

Early diagnosis of rheumatoid arthritis is crucial. With the use of medication, in many cases the effects of the disease can be controlled. Treatment methods focus on relieving pain, reducing inflammation and swelling, and keeping the joints moving as normally as possible. A combination of exercise, rest, joint protection, and physical and occupational therapy also can help manage the disease.



Lesson 3 Review

Reviewing Facts and Vocabulary

1. What are *histamines*, and what role do they play in allergies?
2. Define *asthma*. What are two strategies for managing this condition?
3. What is *osteoarthritis*? List two ways to reduce the risk of osteoarthritis.

Thinking Critically

4. **Synthesizing.** Why is it difficult to avoid many allergens?
5. **Analyzing.** Why is it important for individuals and family members with diabetes to take responsibility for establishing and implementing health maintenance?

Applying Health Skills

Practicing Healthful Behaviors. Make a table. In the first column, write the names of the noncommunicable diseases in this lesson. In the second column, identify risk factors for each disease. In the third column, describe and analyze strategies for healthful lifestyle behaviors that will reduce your risk for the disease.



SPREADSHEETS Using a spreadsheet can help you organize and edit your table. For help using spreadsheets, go to health.glencoe.com.



Lesson 4

Physical and Mental Challenges

VOCABULARY

disability
profound deafness
mental retardation
Americans with
Disabilities Act

YOU'LL LEARN TO

- Identify and recognize the challenges of individuals with disabilities.
- Analyze the influence of laws, policies, and practices on health-related issues, including those related to individuals with disabilities.



Make a word web with the word *disability* in the center. List the types of disabilities you know of around it. Add to your web as you study this lesson.

Does your school have ramps and special restroom facilities to accommodate people in wheelchairs? Are there telephones for people who are hearing- or vision-impaired? Have you ever seen a closed-captioned television program? All these devices are designed to offset a **disability**, *any physical or mental impairment that limits normal activities, including seeing, hearing, walking, or speaking*. According to the latest U.S. Census Bureau statistics, almost 20 percent of the adult population has some type of disability. People with disabilities sometimes have difficulty doing things that others take for granted. The challenge may be physical, such as climbing stairs, seeing a sign, hearing a conversation, or holding a package, or it may be mental, such as understanding simple instructions.

Physical Challenges

The most common types of physical challenges affect a person's senses or the ability to move and get around easily. Most physical challenges can be classified as sight impairment, hearing impairment, or motor impairment.



Computers are one of many devices that people with disabilities can use to meet their physical challenges. *Explain how technology has impacted the health status of individuals.*



CHARACTER CHECK

Caring. Learning sign language can give you the ability to communicate with the hearing impaired. It is also a way of showing that you care about the needs of others.

Do some research to find organizations in your area that offer classes in sign language. Learn some simple signs so that you can communicate with people who are hearing impaired.



Sign language enables many individuals with hearing impairments to enjoy concerts, plays, and other public events.



Sight Impairment

Like other disabilities, sight impairment can be moderate, as for the more than 5 million Americans who are vision-impaired, or it can be severe, as for the 1.3 million people who are legally blind. In addition, an estimated 1.8 million people in the United States are unable to see words and letters in ordinary print even when wearing glasses or contact lenses. Although visual impairment is more common among older adults, nearly 1 in every 1,000 children has partial vision loss or is legally blind.

The leading cause of blindness is the result of complications of diabetes. Three other common causes of blindness are:

- ▶ **macular degeneration**, a disease in which the retina degenerates. It is the leading cause of blindness in individuals over 55.
- ▶ **glaucoma**, a disease that damages the optic nerve of the eye.
- ▶ **cataracts**, a clouding of the lens of the eye.

Regular eye exams are important for people of all ages. The early diagnosis of many conditions can help prevent blindness or slow its progress.

Hearing Impairment

About 20 million adults in the United States have disabilities that affect their ability to hear, and as many as 2 in every 1,000 children have a significant hearing impairment in both ears. Like sight impairment, hearing problems can range from minor to severe.

Profound deafness is a hearing loss so severe that a person affected cannot benefit from mechanical amplification, such as a hearing aid.

One cause of deafness is heredity. Other causes are injury, disease, and obstructions, which can prevent sound waves from traveling to the inner ear. Obstructions may be caused by a buildup of wax, bone blockage, or something stuck in the ear. Some individuals are born with an inherited abnormal bone growth in the inner ear that may cause obstruction. Obstruction usually affects only one ear. Surgery can cure many of these cases.

Hearing impairments caused by nerve damage often occur with age but also can be the result of repeated exposure to loud noises—such as stereos, traffic, video games, and some machines. Going to one loud concert or blasting the stereo occasionally probably won't hurt your ears, but prolonged exposure to loud music can cause hearing loss. In fact, some experts think that hearing loss is occurring much earlier than it did just 30 years ago possibly because of the increase in environmental noise. This type of hearing impairment can be gradual, so if you have noticed that your hearing has changed, it may be time to visit an audiologist, a specialist in hearing problems.

Motor Impairment

Tasks that are simple for most people—tying a shoe, climbing the stairs, opening a jar, lifting a glass—can be a challenge for someone with a motor impairment. Motor impairments result when the body's range of motion and coordination are affected by an injury to the brain or a disorder of the nervous system.


Physical therapy often is used to help those with motor impairment. Through physical therapy, the joints are kept flexible and the muscles stretched, improving the individual's ability to move around. Physical therapists can teach people to use assistive devices. For example, people with limb amputations can be fitted with *prosthetics*, or artificial limbs. Motorized wheelchairs allow many people with motor impairments to get around without assistance. Computers can be adapted in many ways, such as with mouth sticks or head sticks for those unable to use their hands and arms.

Mental Challenges

Some challenges affect a person's ability to live independently in society. One such challenge is **mental retardation**, *the below-average intellectual ability present from birth or early childhood and associated with difficulties in learning and social adaptation*. This disability affects about 3 percent of the population, but many of those with this challenge are only mildly affected. Such individuals, who make up 75 percent of the mentally retarded population, cannot be outwardly distinguished from nonretarded people.

Several factors have been found to cause mental retardation, including injury, disease, and brain abnormality. Some factors are related to **genetic disorders** such as Down syndrome, PKU, Tay-Sachs, and Fragile X syndrome, the most common cause of genetically inherited developmental disability. Behaviors during pregnancy are another important factor. Pregnant women who use alcohol or other drugs greatly increase the risk that their babies will be born with mental retardation, low birth weight, or **fetal alcohol syndrome**. Another preventable risk factor during pregnancy is infection with rubella. Immunization against this disease either during childhood or within three months of becoming pregnant reduces the risk. A restricted supply of oxygen during birth can cause mental retardation. In older children, it can result from a head injury, stroke, and certain infections such as meningitis.



 **Advances in technology have benefited people who use assistive devices to perform daily activities. Name one way your community is improving access and services for individuals with disabilities.**

hotlink

genetic disorders Learn more about genetic disorders in Chapter 19, page 500.

fetal alcohol syndrome Learn more about the effects of alcohol use during pregnancy in Chapter 22, page 576.



How can I show courtesy when I interact with a person who is disabled?

Treating others as you would like to be treated is the best guide for interacting with people, whether or not they are disabled. Speak directly to the person, not to his or her companion. If an individual has a working animal, such as a companion dog, don't call to the animal or pet it—remember, the animal is at work. Distracting the animal may cause it to make mistakes that endanger its handler.

Accommodating Differences

People with physical and mental challenges have the same needs and interests as do the rest of the population. They also have many of the same abilities. Historically people with disabilities have been viewed as a separate population. Fortunately, in recent decades policies and practices have been put in place to help eliminate the barriers of stereotyping and prejudices. The recent trends have resulted from advocacy efforts by individuals with physical and mental challenges and their supporters who have worked to establish the following important principles:

- ▶ Society should make certain changes, such as requiring wheelchair access to public transportation and building entrances that allow people with physical and mental disabilities to take part more readily in business and social activities.
- ▶ People should be evaluated on the basis of individual merit, not on stereotyped assumptions about disabilities.
- ▶ To the extent that each is able, people with disabilities should have the same opportunities as people who do not have physical or mental challenges.



Guide dogs are trained to assist the visually impaired by safely navigating around obstacles such as curbs.

Why should you avoid touching or calling a working guide dog?

A major action toward achieving these goals was the passage by Congress in 1990 of the **Americans with Disabilities Act**, a law prohibiting discrimination against people with physical or mental disabilities in the workplace, transportation, public accommodations, and telecommunications. Some provisions of the act require:

- ▶ employers with 15 or more employees to provide qualified individuals with disabilities an equal opportunity to benefit from employment-related opportunities available to others.
- ▶ state and local governments to follow specific architectural standards both in new construction and in the alteration of their buildings. They also must provide access in inaccessible older buildings and communicate effectively with people who have hearing, vision, or speech disabilities.
- ▶ telephone companies to establish telecommunications relay services (TRS) that enable callers with hearing and speech disabilities to communicate through a third-party communications assistant.

In addition, the Workforce Investment Act of 1998 ensures that any information posted to a Web site by a government agency must meet certain standards for accessibility by those who are disabled.



This ramp is one of many federally required accommodations for people who are disabled. **What other accommodations exist to help those with disabilities?**



Lesson 4 Review

Reviewing Facts and Vocabulary

1. What is a *disability*?
2. List three common causes of blindness.
3. Discuss health-related issues, and list two laws that help integrate people with disabilities into society.

Thinking Critically

4. **Analyzing.** Identify several different ways that you use the senses of sight and hearing each day. For each item, identify challenges that might be associated with each task for someone with an impairment.
5. **Evaluating.** What loud noises are you subjected to each day? What might you do to reduce your exposure to the noise?

Applying Health Skills

Accessing Information. Go to health.glencoe.com to find a link to the Americans with Disabilities Act Web site. Prepare a display analyzing the influence of this law on health-related issues.



PRESENTATION SOFTWARE Make your display professional-looking with presentation software. For help with presentation software, access health.glencoe.com.





Learning to Learn

Think kids with learning disabilities aren't smart? The truth is, many are brighter than average. Meet one teen who outsmarted her classroom challenges.

Vanessa Flatley, 15, of New Jersey, discovered that she had dyslexia in the second grade. Dyslexia is a learning disability (LD) that involves a glitch in the brain's associative center—the area that allows people to recognize and comprehend written words. “With dyslexia, you picture things differently in your head,” Vanessa says. “You get letters mixed up because you can't tell the difference between them.”

Vanessa knew that she was smart—most kids with learning disabilities are—but she couldn't copy words written on a blackboard, and she also had trouble spotting and remembering patterns. This made it almost impossible for her to learn the alphabet and the multiplication tables.

A New Way of Learning

Vanessa left public school in third grade to attend the Learning Studio, a private, one-room school with two teachers. “I was more comfortable because the other kids there were like me,” she says. “They didn't all have dyslexia, but they all had an LD.” Even better, says Vanessa, she didn't feel dumb. It helped that teachers there knew that she and her classmates needed to get

information to their brains in different ways. Vanessa conquered the alphabet, for example, by handling letters covered in sandpaper.

Vanessa's proudest accomplishment was finally learning her multiplication tables. “I couldn't get them, even though I don't have trouble with algebra,” she says. “My tutor was finally able to help me see the patterns.”

What's next for Vanessa? “I'll be integrating into normal classes gradually,” she explains. “I'm pretty nervous, but if I need extra help, I'll ask for it.” Most important, years after being made to feel like the dumbest girl in the class, Vanessa is strong and confident. ■

TIME
to **THINK...**

About Learning Disabilities

Did you know the list of celebrities with dyslexia includes Walt Disney, Thomas Edison, Whoopi Goldberg, and Tom Cruise? Choose one of these celebrities and investigate his or her life. Focus on how your subject dealt with dyslexia and managed to reach his or her dreams. Report your findings to the class.

Health Skills Application



1. Practicing Healthful Behaviors. Ask your parents about the history of cardiovascular disease in their families. Use this information to identify any potential risks you might have for developing cardiovascular disease. What steps can you take to reduce your risk? (LESSON 1)



2. Analyzing Influences. Look at product ads in a variety of magazines. Identify pictures that show people involved in behaviors that increase the risk of developing cancer. Describe how each of these behaviors puts a person at risk of developing cancer. Summarize your findings and report them to the class. (LESSON 2)



3. Accessing Information. Find out about the most common pollen allergens in your community. Gather information about when they are most prevalent and where you can get information about daily pollen counts. Display the information in the classroom. (LESSON 3)



4. Advocacy. Survey a local business to see how it might be made more accessible for individuals who have disabilities. Write a letter to the owner of the business making suggestions for improvement. (LESSON 4)

CAREER Corner

Oncologist

Are you interested in helping people who have cancer? If so, you might consider a career as an oncologist, a doctor who studies, diagnoses, and treats cancers. A person who wants to become an oncologist should be ready to deal with the emotional and psychological challenges associated with patients who may be terminally ill. Becoming an oncologist takes many years of formal training: a four-year college degree, a medical degree, a one-year internship, a four-year residency, and a fellowship in oncology. Find out about this and other careers in Career Corner at health.glencoe.com.



BEYOND the Classroom

Parent Involvement

Advocacy. Find out about health fairs and other events in your community that support cancer education. Contact local chapters of the American Cancer Society to see how you and your parents can become involved.



School and Community

CPR Classes. Locate agencies in your community that teach CPR. Arrange for someone from the agency to teach CPR at your school. Help organize the event and prepare posters or flyers to let people know about it.



Chapter 26 Review

After You Read

Use the notes you have taken in your Foldable as a study guide. Review important terms, recall what you know about those terms, and check your responses by looking under the tabs.



▶ EXPLORING HEALTH TERMS *Answer the following questions on a sheet of paper.*

Lesson 1 *Match each definition with the correct term.*

angina pectoris	cardiovascular disease
atherosclerosis	hypertension
arrhythmias	noncommunicable disease

1. Chest pain that results when the heart doesn't get enough oxygen.
2. A disease that is not transmitted by another person, a vector, or the environment.
3. High blood pressure.
4. Irregular heartbeats.

Lesson 2 *Fill in the blank with the correct term.*

benign	malignant
biopsy	metastasis
cancer	remission
carcinogen	tumor

5. An abnormal mass of tissue that has no natural role in the body is a _____.
6. The spread of cancer from where it originates is called _____.
7. Cigarette smoke and UV radiation are two examples of a _____.
8. A laboratory analysis of a section of tissue taken from a site where abnormal cell growth is suspected is a _____.

Lesson 3 *Match each definition with the correct term.*

allergy	diabetes
autoimmune disease	histamines
arthritis	osteoarthritis
asthma	rheumatoid arthritis

9. A specific reaction of the immune system to a foreign and frequently harmless substance.
10. A chronic disease that affects the way body cells convert food into energy.
11. A disease characterized by the debilitating destruction of the joints due to inflammation.

Lesson 4 *Replace the underlined words with the correct term.*

Americans with Disabilities Act
disability
mental retardation
profound deafness

12. Disability is hearing loss so severe that a hearing aid doesn't help.
13. Profound deafness is the below-average intellectual ability present from birth or early childhood.
14. Mental retardation is a law prohibiting discrimination against people with physical or mental disabilities.

▶ RECALLING THE FACTS *Use complete sentences to answer the following questions.*

1. Why is hypertension considered a "silent killer"?
2. How does plaque affect arteries?
3. What are the warning signs of a heart attack?
4. How does a high-fat diet increase the risk of cancer?

5. Why should people with long-lasting or severe allergies seek medical attention?
6. What are two major ways that people can reduce the risk of type 2 diabetes?
7. How does an autoimmune disease harm the body?
8. What are two of the provisions of the Americans with Disabilities Act?

▶ THINKING CRITICALLY

1. **Evaluating.** What effect does physical activity have on the cardiovascular system? How does

this information affect the goals you set for maintaining health?

2. **Synthesizing.** What would you tell a friend who wants to tan because “tan people look healthier?”
3. **Summarizing.** Write a letter directed to parents of young children that explains how parents can help their children avoid developing type 2 diabetes.
4. **Analyzing.** In the past many people have had misconceptions about individuals with disabilities. What factors do you think contributed to these negative attitudes?

Standardized Test Practice



Read the passage below, and then answer the questions.

(1) In the United States and Canada today, the rights of disabled people are protected by laws that prohibit discrimination and provide for education and accessibility. (2) But things were not always this way.

(3) In ancient times, the survival group depended on the ability of all the members to fight and to find food. (4) Members who could not meet this responsibility became a threat to the group and were often driven away or left to die. (5) Later people came to believe that evil spirits caused injury and disease, and so they feared anyone with a disability. (6) Things did not improve during the Middle Ages, when people who were perceived to be different or less able were ridiculed or treated with suspicion.

(7) It was not until the 1800s that things began to change. (8) People with disabilities were treated with some care, although they were often hidden away at home or in institutions. (9) In the later half of the 1900s, Congress finally enacted three important laws

that now protect the rights of the disabled. (10) By the mid-1900s major progress was made in both preventing and treating disabilities. (11) Rehabilitation centers and hospitals were soon available for all disabled people.

1. What change, if any, should be made to sentence 5?

- A** Change *dissease* to **disease**.
- B** Change *perceived* to **percieved**.
- C** Insert a comma after **ridiculed**.
- D** Make no change.

2. What is the most effective way to improve the organization of the last paragraph?

- A** Insert the word **Finally** at the beginning of the paragraph
- B** Delete sentence 9.
- C** Move sentence 9 to the end of the paragraph.
- D** Delete sentence 11.

3. Write a paragraph describing how your community is accessible to the physically disabled. What further improvements can be made?